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Macroalgae, and especially the cultivated ones, are a promising renewable feedstock that, when used in a biorefinery design, they can provide a wide range of chemicals and biomaterials for numerous applications, in the food, feed, health, cosmetics, and energy sectors.

In the Center for Bioprocess Engineering, we work on a wide range of technological approaches to allow us to take full advantage of the biotechnological potential of macroalgae. We optimize the extraction methodologies using enzyme technology and green chemistry, aiming at the development of products, such as macroalgae-based hydrocolloids for food and pharma, and tailor-made fucoidan and fucoidan oligosaccharides for medical applications. We also propose the use of macroalgae and the various biorefinery side-streams as substrates for the production of single-cell protein, for microbial conversion with improved food and feed quality, for the production of prebiotic food and feed with beneficial effect on the gut flora, and as growth enhancers that allow microorganisms to grow on recalcitrant substrates.